

### REMARKS

This is in response to the Office Action mailed on May 9, 2005, in which all of the pending claims (1-14) were either rejected under 35 U.S.C. § 102(a) as being anticipated by Japanese Patent Publication JP 07-308310 (the '310 publication) or under 35 U.S.C. § 103(a) as being obvious in view of the '310 publication. In addition, claims 1, 2, 4 and 12-14 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 6,416,482 and over claim 3 of U.S. Patent No. 5,811,681. Claims 1-5 and 12-14 were also provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 11/053,480, and those claims were identified as being in conflict with one another.

### Examiner Interview Summary

The undersigned would like to thank the Examiner for conducting a personal interview on June 15, 2005. In the interview, proposed amendments to claims 1, 6 and 12 were discussed with respect to the '310 publication. No formal agreement was reached.

### Background and Summary of the Claimed Invention

The present invention is directed to a system and method for evaluating the hearing ability of a test subject by delivering an audiometric test with automatic error correction. The test consists simply of a test subject putting on a pair of earphones and taking the audiometric test by signaling responses to test tones delivered to the earphones with a handswitch or a similar input apparatus. If the test subject makes an error in signaling responses with the handswitch, such as by pressing the handswitch when no test tones are present, pressing the handswitch multiple times for each tone, or failing to let go of the handswitch after pressing it, the error is automatically detected by a computer that

is programmed to analyze the test subject's responses to determine the existence of an error condition. The computer then delivers audible corrective instructions that correspond to the detected error condition to the test subject through the earphones, to instruct the test subject how to correct the error that was made. Finally, the computer automatically resumes the test by continuing to output test tones and receive responses from the test subject, without intervention by a test administrator or any other person. The manner in which the test is resumed is controlled by software, and takes into account the type of error condition that was detected so testing is resumed properly.

The system offered by the present invention was a significant improvement over previously existing test systems, in that it eliminated the necessity for a test examiner to administer the audiometric test. In prior systems, a test examiner supervised the administration of audiometric tests by providing instructions to the test subject before starting the test, monitoring the test subject's responses to test tones to ensure that no errors were made, and interrupting the test when the test subject made an error. This requirement of supervision by a test examiner limited the ability of prior systems to administer a large number of tests simultaneously (as a single test examiner could only monitor a limited number of simultaneous tests) and to provide corrective instructions in multiple languages (as this ability was limited to the languages spoken by the test examiner). In addition, the cost associated with employment of a test examiner could not be eliminated in prior systems.

Claim Rejections - 35 U.S.C. §§ 102 and 103

A. Claims 1-5

With this Amendment, claims 1-5 have been canceled without prejudice, thereby rendering moot their rejection.

## B. Claims 6-11

Independent claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the '310 publication. The rejection was based primarily on the reasoning given with respect to claim 1 (that the '310 publication discloses a system that outputs tones, monitors a subject's responses to the tones, detects when an error has occurred, and selects a message to display in response to the error). The Examiner further contended that it would have been obvious to operatively couple the microprocessor circuitry to the computer as recited in the claim.

Claim 6, as amended, recites a multimedia audiometer that includes:

- audio circuitry capable of generating test tones for delivery to earphones worn by a test subject
- a computer selectively operable to produce instructions represented by sound waves for delivery to the earphones
- microprocessor circuitry operatively coupled to the computer
- an interface operatively coupled to the computer and the microprocessor circuitry for signaling whether the test subject perceives the audible test tones
- a switch having a first state in which audible test tones generated by the audio circuitry are provided to the earphones, and a second state in which the instructions represented by sound waves produced by the computer are provided to the earphones; and
- software stored in at least one of the computer and the memory of the microprocessor circuitry for operating the system, detecting errors in the test subject's responses to test tones, selectively producing the instructions in response to the detected errors, and controlling the switch to switch to the second state when errors are detected in the

test subject's responses and to automatically switch back to the first state following delivery of the instructions to the earphones so that testing is resumed without human intervention

THE '310 PUBLICATION DOES NOT DISCLOSE, TEACH OR SUGGEST SOFTWARE THAT SWITCHES AN INPUT TO EARPHONES WORN BY THE TEST SUBJECT TO AUDIBLE CORRECTIVE INSTRUCTIONS IN RESPONSE TO DETECTION OF AN ERROR CONDITION

Amended claim 6 recites software that controls a switch to switch to a second state (in which instructions are provided to the test subject's earphones) when errors are detected in the test subject's responses to test tones. The '310 publication does not disclose, teach or suggest this feature, but instead generates an alarm and a display to notify a test examiner when an error condition is detected. The system of the '310 publication therefore requires computer components (such as a display) for each test subject, which can be expensive, particularly in facilities where a large number of test subjects are tested simultaneously.

The present invention, as recited in amended claim 6, provides a system to perform an audiometric test where a test subject simply puts on a pair of earphones and takes the audiometric test by signaling responses to test tones delivered to the earphones with a handswitch or a similar input apparatus. If the test subject makes an error in signaling responses with the handswitch, such as by pressing the handswitch when no test tones are present, pressing the handswitch multiple times for each tone, or failing to let go of the handswitch after pressing it, the error is automatically detected by the software that is programmed to analyze the test subject's responses to determine the existence of an error condition. A switch is then switched to a second position, so that audible instructions corresponding to the detected error are delivered to the test subject's earphones, to instruct the test subject how to correct the error that was made. No individual computer display is needed at the test subject's testing station, which allows multiple test stations to be

utilized with minimal components and expense – only earphones and a handswitch are needed for a test to be performed.

In order to reject a claim under 35 U.S.C. § 103 as being obvious, all of the claim limitations must be taught or suggested by the prior art. See M.P.E.P. 2143.03, citing In re Royka, 180 U.S.P.Q. 580 (C.C.P.A. 1964). The '310 publication does not disclose, teach or suggest switching an input to earphones worn by the test subject to audible instructions when an error condition is detected, as recited by amended claim 6. The rejection of claim 6 under 35 U.S.C. § 103(a) should accordingly be withdrawn.

THE '310 PUBLICATION DOES NOT DISCLOSE, TEACH OR SUGGEST  
AUTOMATICALLY SWITCHING THE INPUT TO THE EARPHONES  
BACK TO TEST TONES AFTER INSTRUCTIONS ARE DELIVERED

Amended claim 6 recites software that controls a switch to switch to a second state (in which audible instructions are provided to a test subject's earphones) when errors are detected in the test subject's responses, and to automatically switch back to the first state following delivery of the instructions to the earphones so that testing is resumed without human intervention. The configuration of the software to automatically resume testing following an error in the test is a significant improvement over previously existing test systems. The method recited in amended claim 6 eliminates the necessity for a test examiner to administer the audiometric test. In prior systems, a test examiner supervised the administration of audiometric tests by providing instructions to the test subject before starting the test, monitoring the test subject's responses to test tones to ensure that no errors were made, and interrupting the test when the test subject made an error. The test examiner's judgment was required in order to deal with errors and allow the test subject to continue testing. This requirement of supervision by a test examiner limited the ability of prior systems to administer a large number of tests simultaneously (as a single test examiner could only monitor a limited number of simultaneous tests) and to provide corrective instructions in multiple languages (as this ability was limited to the languages

spoken by the test examiner). In addition, the cost associated with employment of a test examiner could not be eliminated in prior systems.

The '310 publication discloses a system in which a computer detects an error condition, and in response to the error condition, interrupts the audiometric test, sounds an alarm and displays instructions on a display to notify a test examiner that an error has occurred. In order to resume the test (by providing test tone signals to the test subject), the test examiner must press a restart button, which clears the message on the display and stops the alarm sound. See the '310 publication at paragraphs [0043], [0065] and [0075] and at Figure 4 (step SP45), Figure 7 (step SP124), and Figure 9 (step SP155). The test examiner is needed in the system of the '310 publication to ensure that the test subject understands how to avoid recurrence of the errors that previously occurred, and to restart the testing process only after the test subject shows this understanding. By contrast, the inventors of the system recited in amended claim 6 devised a scheme for handling error conditions and resumption of testing automatically, by delivering corrective instructions and automatically resuming testing in a manner that is controlled by software and is based on the type of error condition that was detected. The system of the present invention eliminates the need for a test examiner to apply this judgment. Thus, the system of the '310 publication fails to disclose, teach or suggest the method of amended claim 6, as a test examiner (rather than the automatic operation of software) is required to be involved in manually restarting the outputting of test signals.

Because the '310 publication does not suggest a system that eliminates the need for a test examiner by employing software that automatically switches between the delivery of audible instructions in response to detected errors and back to the delivery of test tones, as recited by amended claim 6, the rejection of claim 6 under 35 U.S.C. § 103(a) should be withdrawn.

Claims 7-11 depend from amended independent claim 6, and are allowable therewith.

C. Claims 12-17

Independent claim 12 was rejected under 35 U.S.C. § 102(a) as being anticipated by the '310 publication.

Claim 12, as amended, recites a computer adapted to perform an audiometric test of a subject that includes

- a test tone generator operable to deliver audible test tones to earphones worn by the subject
- an input/output interface, and
- software programmed to control the test tone generator to deliver the audible test tones to the earphones worn by the subject, monitor responses by the subject received over the input/output interface, detect errors in the subject's responses, selectively deliver audible corrective instructions to the earphones in response to the detected errors, and automatically resume delivery of the audible test tones after the audible corrective instructions are delivered without human intervention

THE '310 PUBLICATION DOES NOT DISCLOSE SOFTWARE THAT  
DELIVERS TEST TONES TO THE SUBJECT'S EARPHONES AND  
THAT DELIVERS AUDIBLE CORRECTIVE INSTRUCTIONS TO  
THE SUBJECT'S EARPHONES IN RESPONSE TO DETECTION  
OF AN ERROR CONDITION

Amended claim 12 recites software programmed to control a test tone generator to deliver audible test tones to earphones worn by a subject, and to selectively deliver audible corrective instructions to the earphones in response to detected errors in

the subject's responses to the test tones. As discussed above with respect to claim 6, the '310 publication does not disclose, teach or suggest a configuration in which both test tones and audible instructions are both provided to the subject's earphones, but instead generates an alarm and a display to notify a test examiner when an error condition is detected. For the same reasons discussed above with respect to claim 6, the '310 publication fails to disclose, teach or suggest a system that delivers both audible test tones and audible corrective instructions (in response to an error condition) to the subject's earphones, and the rejection of amended claim 12 under 35 U.S.C. § 102(a) should accordingly be withdrawn.

THE '310 PUBLICATION DOES NOT DISCLOSE AUTOMATICALLY RESUMING THE DELIVERY OF TEST TONES AFTER CORRECTIVE INSTRUCTIONS ARE DELIVERED

Amended claim 12 also recites automatically resuming the delivery of audible test tones after audible corrective instructions are delivered (in response to an error condition) without human intervention. As discussed above with respect to claim 6, the configuration of the software to automatically resume testing following an error in the test is a significant improvement over previously existing test systems, as it eliminates the necessity for a human test examiner to administer the audiometric test.

The '310 publication discloses a system in which a computer detects an error condition, and in response to the error condition, interrupts the audiometric test, sounds an alarm and displays instructions on a display to notify a test examiner that an error has occurred. In order to resume the test (by providing test tone signals to the test subject), the test examiner must press a restart button, which clears the message on the display and stops the alarm sound. See the '310 publication at paragraphs [0043], [0065] and [0075] and at Figure 4 (step SP45), Figure 7 (step SP124), and Figure 9 (step SP155). Thus, the system of the '310 publication fails to disclose, teach or suggest the method of amended claim 12,



as a test examiner (rather than the automatic operation of software) is required to be involved in manually restarting the outputting of test signals.

Because the '310 publication does not disclose, teach or suggest a system that eliminates the need for a test examiner by employing software that automatically resumes the delivery of test tones after audible corrective instructions are delivered (in response to an error condition) without human intervention, as recited by amended claim 12, the rejection of claim 12 under 35 U.S.C. § 102(a) should be withdrawn.

Claims 13 and 14 depend from amended independent claim 12, and are allowable therewith.

#### Claim Rejections – Double Patenting

With this Amendment, Terminal Disclaimers are submitted to overcome the rejection of claims under the judicially created doctrine of obviousness-type double patenting.

#### New Claim

New claim 15 depends from amended independent claim 6, and is allowable therewith.


CONCLUSION

In view of the foregoing, all of the pending claims (6-15) are in condition for allowance. A notice to that effect is respectfully requested.

Respectfully submitted,

KINNEY & LANGE, P.A.

Date: August 9, 2005

By: 

Alan M. Koenck, Reg. No. 43,724  
THE KINNEY & LANGE BUILDING  
312 South Third Street  
Minneapolis, MN 55415-1002  
Telephone: (612) 339-1863  
Fax: (612) 339-6580

AMK